

[Provisional Translation Only]

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JDI Develops eLEAP, World's First Maskless Deposition + Lithographic OLED Historic Breakthrough in Display Performance — Improves Emission Efficiency 2X, Peak Brightness 2X, and Lifetime 3X —

Japan Display Inc. (JDI) has developed eLEAP, the world's first OLED technology ready for mass production using maskless deposition and lithography. eLEAP is a historic breakthrough in display technology that overcomes the weaknesses of current OLED and LCD display technologies.

eLEAP environment positive
Lithography with maskless deposition
Extreme long life, low power, and high luminance
Any shape Patterning

Currently, Fine Metal Masks (“FMM”) are the primary method of organic material evaporation for OLED display mass production. eLEAP does not use FMMs – it is a radically new technology that patterns RGB pixels more precisely. eLEAP increases emission efficiency¹ up to 60%, which is >2X the emission efficiency (aperture ratio) generated by the FMM method (reference: 300ppi OLED, JDI benchmark).

In combining eLEAP with JDI's innovative HMO (High Mobility Oxide) backplane technology, JDI is dramatically improving the weak points of OLED displays with respect to peak brightness, lifetime, and power consumption. eLEAP also enables designs to be free shape and can manufacture large displays, which is difficult with the conventional FMM method due to the limitations of metal masks. The conventional FMM method for OLED is limited up to G6 glass substrate sizes (c. 1500 mm x 1850 mm), while eLEAP is able to be deployed at G8 (c. 2200 mm x 2500 mm) or larger.

¹ Emission Efficiency (aperture ratio): The ratio of the emission area to the total area of the pixel.

eLEAP is also a GreenTech manufacturing process with low operating costs. The issues with the conventional FMM method include low material usage efficiency in the deposition process, with a significant amount of material waste due to the need for cleaning fluids to remove materials adhering to the FMM during production. Because eLEAP does not use FMMs, the eLEAP manufacturing process significantly reduces both material usage and waste and CO2 emissions. eLEAP displays are thus more environment positive than OLED displays manufactured via the conventional FMM method.

eLEAP is a historic breakthrough in display technology that is far superior to current OLED technologies. JDI is already in discussions with customers and has received significant customer interest, with customer demand expected to grow rapidly over time. JDI will start sample eLEAP production this year and increase production volumes going forward. JDI also expects to provide this breakthrough technology to other display companies, driving significant growth for JDI while working to contribute to a sustainable society.

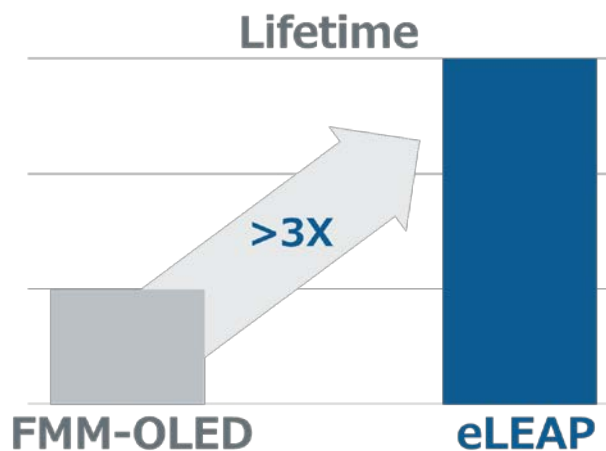
Reference: eLEAP Technical Data

Developed on the back of JDI's design and process know-how accumulated over many years, eLEAP solves the burn-in and short lifetime problems of conventional FMM OLED, and realizes higher aperture ratio, higher peak luminance and higher resolution, while maintaining properties of conventional FMM OLED in terms of thinness, lightweight, high contrast, and fast response times.

Lifetime Comparison

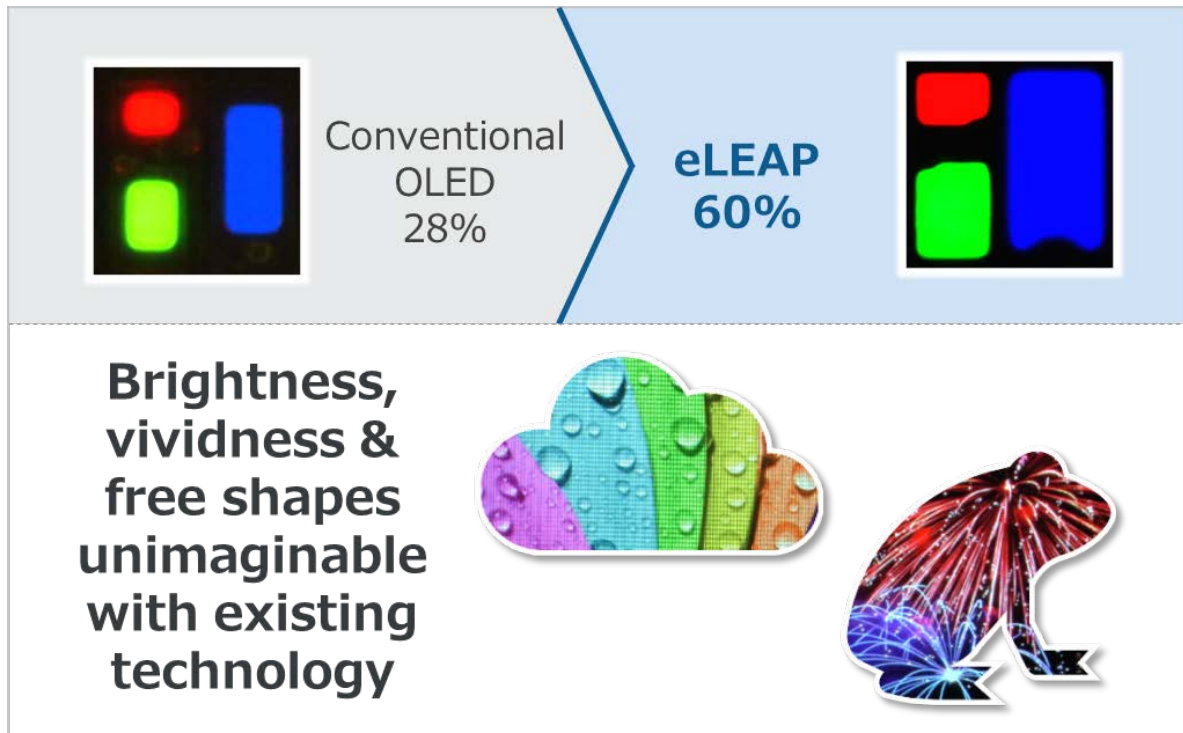
Lifetime	New	1 year	3 years	5 years
	0h	1000h	3000h	5000h
Conventional OLED				
eLEAP				

(reference: 600nit, 3h/day, 300ppi OLED, JDI benchmark)

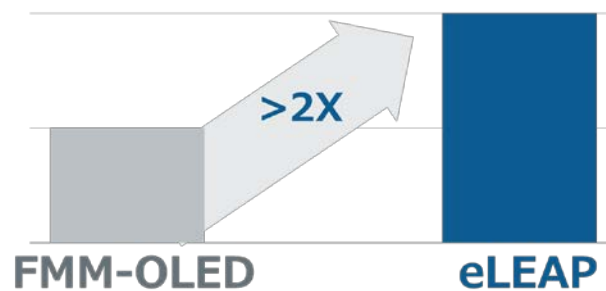


(reference: 300ppi OLED, JDI benchmark)

Emission Efficiency (Aperture Ratio) Comparison

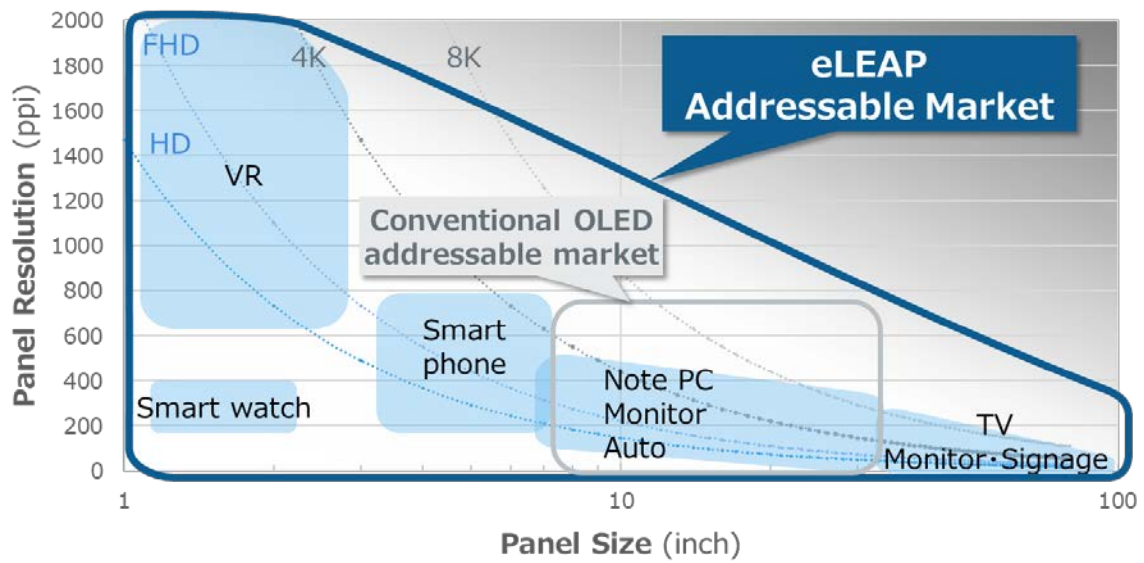


Peak Brightness



(reference: 300ppi OLED, JDI benchmark)

eLEAP Panel Size and Resolution



eLEAP Functionality Advantages

Functionality	High Resolution	High Brightness & Low Power Consumption	Long Life & Burn-In Free	Free Shape	Low Environmental Impact
Market					
VR/AR	◎	◎	◎	○	◎
Wearable	○	◎	◎	◎	◎
Smartphone	○	○	◎	○	◎
Note PC	○	○	◎	○	◎
Tablet	○	○	◎	○	◎
Automotive	○	○	◎	◎	◎
TV/Monitor	○	○	◎	○	◎

◎ = Highest
○ = High

Please note that eLEAP is a provisional name, pending registration.